REMARKS

Introduction

In response to the Office Action dated June 25, 007, Applicants have amended claims 1, 12, and 21. Support for amended claims 1, 12, and 21 is found in, for example, Paras. [0007], [0066], and [0079]. Care has been taken to avoid the introduction of new matter. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 12, 13, and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,803,967 (hereinafter Plano) in view of JP 03-075298 (hereinafter Takahiro). Amended claims 1, 12, and 21 recite in part, for example, "a diamond polycrystalline film having crystals **with random orientation**."

In the Advisory Action, the Examiner indicated that the claims recite a polycrystalline layer, and the "polycrystalline layer" is open to either random orientated or highly orientated layers.

It is well known by persons skilled in the art that a polycrystalline crystal is characterized by variously oriented crystals. The experiments conducted in the present application that grow polycrystalline and monocrystalline films are performed at different temperatures, which demonstrates that the crystals of polycrystalline films have random orientation (*see, e.g.,* Tables 1 and 5; Paras. [0004], [0066], [0079]). Polycrystalline pertains to "a material composed of aggregates of individual crystals," and "is characterized by variously oriented crystals" (*see,* McGraw-Hill Dictionary of Scientific and Technical Terms, © 2007, fifth edition, pg. 1542). A

single crystal is "a crystal, usually grown artificially, in which all parts have the same crystallographic orientation" (*emphasis added,* McGraw-Hill Dictionary of Scientific and Technical Terms, © 2007, fifth edition, pg. 1832).

The "polycrystalline diamond" made by Plano is merely an aggregate of small-sized **single crystal** diamonds, not a diamond polycrystalline film having random orientation. Plano fails to disclose or suggest, a diamond polycrystalline film having crystals with having crystals with random oreintation, as required by amended claims 1, 12, and 21.

The Examiner admits that Plano does not teach the substrate that is claimed. The Office Action relies on Takahiro in an attempt to cure the deficiencies of Plano. The Office Action states that Takahiro teaches that large single crystal diamonds can be placed together to create a base for diamond growth. The Office Action asserts that it would have been obvious to one of ordinary skill in the art to modify Plano by the teachings of Takahiro to use a single crystal diamond base in order to ensure that the grown vapor layer of diamond has uniform orientation.

However, Takahiro is directed to growing a monocrystalline diamond on a substrate having a plurality of monocrystal diamonds, not to growing **polycrystalline diamond having crystals with random orientation** on a diamond monocrystalline substrate. The claimed diamond composite substrate has randomly oriented crystals in the diamond polycrystalline film formed over a diamond monocrystalline substrate by vapor phase synthesis. Thereby as taught in the instant specification, the resultant diamond composite substrate exhibits an increase in bending resistance (*see, e.g.,* Tables 2 and 4; Paras. [0056]-[0063] of the originally filed specification). However, Takahiro does not disclose or suggest this, and apparently is unaware of the unexpected improvement in **both** high toughness and high thermal conductivity. Thus,

Takahiro fails to disclose or suggest, "a diamond polycrystalline film having crystals **with random orientation,**" as recited in amended claims 1, 12, and 21.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Takahiro to modify the crystal orientation of the alleged polycrystalline film of Plano, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Plano. *See, KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of the diamond polycrystalline film having crystals with random orientation is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claims 2, 3, 5-11, 15-20, 22, 23, and 25-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Plano in view of Takahiro. Dependent claims 2, 3, 5-11, 15-20, 22, 23, and 25-28 are allowable for at least the same reasons as the independent claims for which they depend.

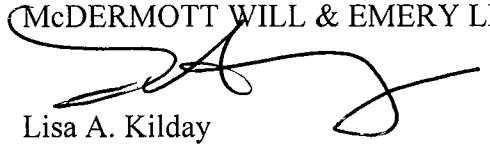
Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Lisa A. Kilday
Registration No. 56,210

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 SAB:LAK:lnm
Facsimile: 202.756.8087
Date: October 25, 2007

Please recognize our Customer No. 20277 as our correspondence address.

WDC99 1481351-1.050389.0053